GOVERNMENT ZIRTIRI RESIDENTIAL SCIENCE COLLEGE

Subject:Zoology
Paper name: Developmental Biology
Paper No: ZL XIX
Semester:VI

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A. Multiple choice questions [25 (5 from each unit)]

1. Which of the following pair of organelles are actually homologous in sperm and egg
    a) Cortical granules and mitochondria
    b) Acrosomal vesicles and cortical granules
    c) Acrosomal vesicles and mitochondria
    d) All of these
2. Centrolecithal eggs are found in
    a) Insects
    b) Molluscs
    c) Sea Urchin
    d) Marsupials
3. Prevention of polyspermy is done via
    a) Fast block
    b) Slow block
    c) Both of these
    d) Nothing like this happens during fertilization
4. When in parthenogenesis, only males are produced, it is known as
    a) Amphitoky
    b) Thelotoky
    c) Arrhenotoky
    d) None of these
5. When cleavage furrow extends through the entire zygote, it is
    a) Complete cleavage
    b) Holoblastic cleavage
    c) Both a and b
    d) Meroblastic cleavage
6. Regarding blastocoels, which of the following statement(s) is/are true
    a) It permits cell migration during gastrulation
    b) It prevents the cells beneath it from interacting prematurely with the cells above it.
    c) It forms the future alimentary canal
    d) Both a and b
7. The marsupials are having
    a) Allanto chorionic placenta
    b) Yolk sac placenta

c) Chorionic placenta
d) None of these

8. Which of the following hormone is secreted by placenta
   a) Relaxin
   b) Chorionic gonadotropin (CG)
   c) Placental lactogens
   d) All of these
9. Primary function of yolk sac membrane is
   a) Nutrition
   b) Respiration
   c) Excretion
   d) Mechanical protection
10. Those vertebrates who are having extra embryonic membrane is called
   a) Amniotes
   b) Anamniotes
   c) Placental mammals
   d) None of these
11. Bottle cells are unique cells that appear during
   a) Blastulation
   b) Gastrulation
   c) Mid blastula transition
   d) None of these
12. During gastrulation, as the cells involute, a cavity is formed that forms the future alimentary canal. This cavity is known as
   a) Primitive gut
   b) Archenteron
   c) Both a and b
   d) None of these
13. After the completition of gastrulation, how many germ layers are formed
   a) 2 germ layers in diploblastic animal development
   b) 3 germ layers in triploblastic animal development
   c) **Both a and b are true**.
   d) Number of germ layers are not fixed and vary from species to species.
14. Cell fates can also be specified by specific amounts of soluble molecules secreted at a distance from the target cells. Such a soluble molecule is called
   a) Morphogen
   b) Lactogen
   c) Enzymes
   d) Hormones
15. Which of the following statement(s) is/are true for morphogen?
   a) Morphogen is a diffusible substance.

b) A morphogen may specify more than one cell type by forming a concentration gradient.
c) The concept of morphogen gradients had been used to model another phenomenon of regulative development: regeneration.
d) All are true

16. Egg, larva, pupa and adult stages are observed in
    a) Holometabolic development
    b) Hemimetabolic development
    c) Ametabolic development
    d) Paurometabolic development
17. Moulting hormone is
    a) Ecdysone
    b) Juvenile hormone
    c) Thyroxine
    d) All of these
18. Which of the following statement(s) is/are true about regeneration
    a) Regeneration is more common in lower phylum.
    b) In epimorphosis, adult structures undergo dedifferentiation to form a relatively undifferentiated mass of cells that then redifferentiates to form the new structure.
    c) Regeneration blastema is an aggregation of relatively dedifferentiated cells derived from the originally differentiated tissue
    d) All of these statements are true.
19. Which of the following statement(s) is / are true about the tadpole larva of frog
    a) Tadpole is aquatic and strictly herbivores.
    b) The alimentary canal of tadpole is comparatively coiled and longer than that of adult.
    c) Tadpole is ammonotelic
    d) All the statements are true.
20. How many Hox genes are found in *Drosophila*
    a) 4
    b) 8
    c) 6
    d) 2
21. Which of the following cell is exclusively totipotent or omnipotent stem cell
    a) Egg cell
    b) Zygote
    c) Inner cell mass
    d) Trophoblast
22. During IVF, which of the following hormone is used for the hyperstimulation of ovary
    a) Growth hormone
    b) Prolactin
    c) Testosterone
    d) Gonadotropin

23. Transgenesis can be done via
    a) DNA microinjection
    b) Retro virus mediated gene transfer
    c) Embryonic cell mediated gene transfer
    d) All of these
24. The unfortunate condition in which the children attain the symptoms of old age, are called
    a) Down syndrome
    b) Cat Cry syndrome
    c) Hutchinson-Gilford progeria
    d) All of these
25. When the limbs are under developed or absent, the condition is known as
    a) Seal limb disease
    b) Phocomelia
    c) Syndactyly
    d) Both a and b

B. Fill up the blanks [15 (3 from each unit)]

1. The placental mammals have _____ eggs. [Alecithal / Mesolecithal]
2. Supercoiling of DNA in sperm nucleus is done by _____ protein. [Histone / Protamine]
3. When in parthenogenesis, eggs produces both male and female, it is called _____ [Amphitoky / Arrehnotoky]
4. Cleavage in frog is radially symmetrical and _____ [Holoblastic / meroblastic]
5. _____ is a technique, we can track the development of a group of embryonic cells [Embryonic map / fate map]
6. Humans are having _____ placenta [Allanto- chorionic / chorionic]
7. The dorsal blastoporal lip and its descendants are called _____ [Yolk plug / Organizer]
8. When individual cells migrate from the surface layer into the interior of embryo, it is called _____ [Delamination / ingression]
9. **A _____ field can be described as a group of cells whose position and fate are specified with respect to the same set of boundaries.**[morphogenetic / fate map]
10. T3 activates the apoptosis-inducing enzyme _____ **which causes** cell death in the tadpole muscle cells. [Proteosome / caspase 9]
11. The group of cells that continue to proliferate and redifferentiate during regeneration, are called _____ [Regeneration blastema / morphogenetic feild]
12. The Hox protein is having _____ made up of 60 amino acids which binds the enhancer portion of DNA. [active site / homeodomain]
13. In _____ two or more fingers are fused with one another [Polydactyly / syndactyly]
14. _____ and potency are two basic properties of stem cells [Self renewal / Immortal nature]
15. _____ is the process of introducing an exogenous gene [IVF / Transgenesis]

Key Answers

A. Multiple choice questions [replace x]

1.b)	2.a)	3.c)	4.c)	5.c)	6.d)	7.b]
8.d)	9.a)	10.a)	11.b)	12.c)	13.c)	14.a]
15.d)	16.a)	17.a)	18.d)	19.d)	20.b)	21.b]
22.d)	23.d)	24.c)	25.d)			

B. Fill up the blanks [replace x]

1. Alecithal
2. Protamine
3. Amphitoky
4. Holoblastic
5. fate map
6. chorionic
7. Organizer
8. Ingression
9. Morphogenetic
10. caspase 9
11. Regeneration blastema
12. Homeodomain
13. Syndactyly
14. Self renewal
15. Transgenesis